Another Shot to Protect People With Diabetes: Add Hepatitis B Vaccination to the Checklist

The average outpatient visit for an adult patient with diabetes involves numerous interventions and discussions: management of multiple medications; assessment of control of glycemia, blood pressure, and dyslipidemia; counseling regarding diet and exercise; screening for diabetes complications; and often assessment and management of other acute and chronic concerns. Now clinicians have another intervention for many of their adult patients with diabetes: the vaccination series for hepatitis B virus (HBV). Late last year, the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) recommended that all previously unvaccinated adults with diabetes aged 19–60 years be vaccinated against HBV as soon as possible after a diagnosis of diabetes is made, and that vaccination be considered for those aged 60 and over, after assessing risk and likelihood of an adequate immune response (1).

HBV causes acute liver infection associated with substantial morbidity and occasionally mortality. Approximately 1 in 20 acute infections progresses to chronic infection that can lead to cirrhosis or liver cancer; individuals with chronic HBV infection serve as a reservoir for ongoing transmission of the disease. Diabetes does not immediately come to mind as a risk factor for an infectious disease most commonly associated with high-risk sexual and drug-taking behaviors. However, at least 29 outbreaks of HBV in long-term care facilities and hospitals have been reported to the CDC, with the majority involving adults with diabetes receiving "assisted blood glucose monitoring," in which such monitoring is done by a health care professional with responsibility for more than one patient (1). HBV is highly transmissible and stable for long periods of time on surfaces such as lancing devices and blood glucose meters, even when no blood is visible. Blood sufficient to transmit the virus has also been found in the reservoirs of insulin pens, resulting in warnings against sharing such devices between patients (2). HBV outbreaks related to assisted blood glucose monitoring and shared insulin pens, while dramatic, have involved few people with diabetes compared with the 19 million adults with diagnosed diabetes in the U.S., and should be entirely preventable with adequate infection control procedures. Why, then, did ACIP recommend vaccination for all adults with diabetes up to age 60 (and issue a permissive recommendation for older adults, who would be most likely to need long-term care)?

CDC analyses suggest that, excluding persons with HBV-related risk behaviors, acute HBV infection is about twice as high among adults with diabetes aged 23 years and over compared with adults without diabetes. Seroprevalence of antibody to HBV core antigen, suggesting past or current infection, is 60% higher among adults with diabetes than those without, and there is some evidence that diabetes imparts a higher HBV case fatality rate (1). Why the age differentiation in the recommendations?

Table 1—*Vaccines for adults with diabetes

Vaccine	Recommendation	Vaccine administration
Hepatitis B	All adults ≤60 years of age with diabetes Consider in those >60 years of age with diabetes	3 doses at 0, 1, 6 months
Pneumococcal	All adults ≥65 years of age Adults <65 years of age with diabetes	1 dose at ≥65 years of age 1 dose at <65 years of age with 1 additional dose at ≥65 and ≥5 years from first dose
Influenza	All adults	1 dose annually 3 vaccine options (approved for): •Traditional injected vaccine (any adult) •Intradermal vaccine (adults 18–65 years) •High-dose injected vaccine (adults ≥65 years)
Td/Tdap	All adults	Td every 10 years with Tdap in place of one Td vaccine Certain adults should not wait 10 years to get Tdap: •Pregnant women (late in trimester 2 or anytime in trimester 3) •Those who anticipate close contact with infants <1 year of age •Health care workers
Shingles	All adults	1 dose at ≥60 years of age
HPV	All women up to age 26, unless immunized earlier All men up to age 21 (may be vaccinated up to age 26), unless immunized earlier	3 doses at 0, 2, 6 months

Td, tetanus and diphtheria; Tdap, tetanus, diphtheria, and pertussis. *Additional vaccines are recommended for adults who have certain risk factors or who were not immunized against certain diseases as children. Full recommendations are available at cdc.gov/vaccines.

The CDC Hepatitis Vaccines Work Group developed economic models suggesting that vaccination of adults with diabetes who were aged 20–59 years would cost an estimated $75,000 per quality-adjusted life-year saved, while cost per quality-adjusted life-year saved increased significantly at higher ages. In addition to competing causes of mortality in older adults, the immune response to the vaccine declines with age (1).

These new recommendations regarding HBV vaccinations serve as a reminder to clinicians that adults with diabetes need a number of vaccinations, both those specifically indicated because of diabetes as well as those generally recommended for the adult population (Table 1). Outpatient care systems are likely to be better organized to deliver vaccines such as that against influenza, which is offered annually during one season to a large majority of the patient population, than vaccines that are episodic or once-per-lifetime and indicated for fewer patients in a practice, such as HBV vaccination for adults with diabetes. Although the HBV vaccination series traditionally consists of doses at 0, 1, and 6 months, the CDC recommends incorporating the series into regular visit intervals, as effectiveness is comparable even when the intervals between doses are longer than those stated above (1). The National Foundation for Infectious Diseases provides a number of education, reminder, and tracking tools related to adult vaccinations on its website (www.nfid.org).

Many decades in the future, we will have an adult population that was universally vaccinated against HBV in childhood, as is now recommended. For now, adults with diabetes need to be educated about HBV vaccination and other recommended vaccines. In the minds of clinicians, diabetes needs to be associated not only with "shots" to reduce blood glucose, but also "shots" to prevent infectious diseases. The American Diabetes Association, National Foundation for Infectious Diseases, CDC, and other health care and provider organizations will need to support patients with diabetes and their health care professionals as they add another consideration to chronic care visits.

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